

**PROPOSAL TO REESTABLISH
THE BLACK-TAILED PRAIRIE DOG (*Cynomys ludovicianus*)
TO SOUTHERN ARIZONA**

Jared Underwood, Small Mammal Conservation Coordinator
William E. Van Pelt, Birds and Mammals Program Coordinator
Nongame Branch, Wildlife Management Division



DRAFT

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EXECUTIVE SUMMARY

The black-tailed prairie dog (*Cynomys ludovicianus*) formerly occurred in grasslands of southeastern Arizona. Population declines began in the late 1800s and continued into the mid-1900s, leading to eventual extirpation of the species in Arizona sometime between 1930 and 1960. Extirpation of this species was largely caused by an extensive poisoning campaign.

The Arizona Game and Fish Department has initiated investigations to determine the feasibility of reestablishing the black-tailed prairie dog within its former range in Arizona. These investigations are being guided by the Arizona Game and Fish Department's *Procedures for Nongame Wildlife and Endangered Species Reestablishment Projects*. A reestablishment proposal has been developed according to these procedures, which develops approaches to reestablish black-tailed prairie dogs at historical sites in Arizona with a high potential to succeed. Under this proposal, prairie dogs will be released within their historical range at sites on federal lands. This effort will contribute toward range-wide conservation efforts and benefit the state through reestablishment of an extirpated species.

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PROPOSAL TO REESTABLISH BLACK-TAILED PRAIRIE DOG (*CYNOMYS LUDOVICIANUS*) TO SOUTHERN ARIZONA

INTRODUCTION

The black-tailed prairie dog (*Cynomys ludovicianus*) was historically the most abundant and widely distributed of the prairie dog species (Whicker and Detling 1988, Hoogland 1996). Human-related factors have greatly reduced black-tailed prairie dog numbers range-wide over the last 150 years (Miller et al. 1990, Hoogland 1996). This precipitous decline, as well as fragmentation and isolation of remaining populations (Miller et al. 1994), has created concern for the long-term viability of the species. On July 30, 1998, the National Wildlife Federation (NWF) petitioned the U.S. Fish and Wildlife Service (Service or USFWS) to emergency list the black-tailed prairie dog throughout its range as threatened under the Endangered Species Act. In September 1998, the Service responded to the NWF that the black-tailed prairie dog did not meet the criteria for emergency listing, but the petition would be further evaluated under the 90-day review process. On February 4, 2000, the Service announced that listing of the black-tailed prairie dog was warranted but precluded by higher listing priorities, and placed the species on its candidate list (USFWS 2000). However, the species was removed from the candidate list on August 12, 2004. In part, the reason for delisting was due to state and tribal progress in management of the black-tailed prairie dog.

Starting in November 1998, state, federal, tribal, and other entities with an interest in black-tailed prairie dog management met to discuss the petition and assess the feasibility of a range-wide conservation agreement. Those participating agreed that pursuing a conservation agreement was the most reasonable approach for black-tailed prairie dog conservation and could potentially be a significant step forward in bringing local governments, private landowners, and nongovernmental organizations directly into black-tailed prairie dog management and conservation. In November 1999, nine state wildlife agencies within the species' historic range, including Arizona, finalized and implemented a *Black-tailed Prairie Dog Conservation Assessment and Strategy* (Van Pelt 1999). The purpose of the agreement is to guide conservation and management of the species on a range-wide basis. Each state agreed to convene a working group, and develop and implement state black-tailed prairie dog management plans. The commitments in this conservation agreement and the resulting state management plans contributed to the Service's decision to remove the species from the candidate list.

PURPOSE

This proposal was developed through the Arizona Game and Fish Department's (AGFD) 12-step reestablishment process (Johnson and Glinski 1987, Appendix I) to reestablish self-sustaining populations of black-tailed prairie dogs at historical sites in Arizona. This plan is intended to be a

dynamic document that will be reviewed annually and updated if necessary through recommendations from the cooperating agencies and participating landowners.

Another purpose of this proposal is to contribute to the range-wide conservation effort for black-tailed prairie dogs by establishing a free-ranging population in southern Arizona, through releases at the Las Cienegas National Conservation Area (Pima County). This is consistent with objectives in the *Black-tailed Prairie Dog Conservation Assessment and Strategy* (Van Pelt 1999), the *Draft Interagency Management Plan for Black-tailed prairie dogs in Arizona* (Van Pelt et al. 2001) and Bureau of Land Management Resource Management Plans for the reestablishment area.

Impacts of activities under this reestablishment proposal on other land uses and wildlife resources will be negligible. Prairie dogs will be released at sites on federal lands at which the grazing lessees have agreed to cooperate. We anticipate no conflicts with any current or future recreational uses. There will be no significant soil, vegetation, or cultural disturbance at any site. All activities will have only localized effects, and National Environmental Policy Act (NEPA), Endangered Species Act (ESA), cultural resources, and other required compliance will be completed by the appropriate agency.

PROJECT BENEFITS

Possible benefits of reintroducing black-tailed prairie dogs to southern Arizona include:

1. Reestablishment is an objective of the Interstate Black-tailed Prairie Dog Conservation Team, the Arizona Black-tailed Prairie Dog Working Group, and the BLM, to preclude the need for protection under the Endangered Species Act.
2. Prairie dogs would be restored to their historical range in Arizona, an action consistent with the AGFD's mission to restore and protect native wildlife (see AGFD 2006).
3. Prairie dogs are described as a keystone species for grasslands. The reestablishment of prairie dogs to the grasslands of southern Arizona will help restore a critical function of this ecosystem. A wide variety of priority wildlife species (e.g. burrowing owls, golden eagles, and pronghorn) will likely benefit from grassland restoration.
4. Reestablishment will aid the AGFD in meeting the goals outlined in the Comprehensive Wildlife Conservation Strategy (AGFD 2006).

RELATED DOCUMENTS

Companion documents would include the *Black-tailed Prairie Dog Conservation Assessment and Strategy* (Van Pelt 1999), the *Draft Interagency Management Plan for Black-tailed prairie*

dogs in Arizona (Van Pelt et al. 2001), and BLM Resource Management Plans for the reestablishment area.

BLACK-TAILED PRAIRIE DOG BIOLOGY

LIFE HISTORY AND HABITAT NEEDS

The black-tailed prairie dog is a diurnal, burrowing rodent, almost 15 inches in length, including a 2½-inch, black-tipped tail. Unlike some other species within the genus *Cynomys*, black-tailed prairie dogs do not hibernate; however, they will remain underground for several consecutive days during extremely cold weather (Hoogland 1996). Black-tailed prairie dogs are highly social animals. They live in family groups, or coterie, which typically consist of a breeding adult male, one to four breeding adult females and their offspring younger than two years of age. With the emergence of young, coterie can number up to 40 individuals (Hoogland 1995, 1996). The primary benefit of this colonial lifestyle is protection from predators: black-tailed prairie dogs have an elaborate communication system to warn others of the presence of danger, including both auditory and visual cues (King 1955, Hoogland 1981, 1995).

A prairie dog town or colony is typically composed of different family groups, and in uncontrolled circumstances can cover thousands of acres of grassland (Dahlsted et al. 1981, Knowles 1986). Females usually spend their entire lives in their natal coterie while males of breeding age disperse, typically to neighboring family groups within the same colony (Hoogland 1982, Hoogland 1995). Inter-colony dispersal does occur; however, it is often unsuccessful due to increased vulnerability to predation (Garrett and Franklin 1988). The Black-tailed Prairie Dog Conservation Team considers colonies within 4.3 mi (7 km) of each other a prairie dog complex. This is a functional definition based on dispersal distances of the prairie dog's obligate predator, the black-footed ferret (*Mustela nigripes*), and is close to the average dispersal distance for black-tailed prairie dogs (Biggins et al. 1993).

Breeding season varies with latitude- beginning in January in the southern part of the species' range and April in the northern part (Hoogland 1995, 1996). The average length of gestation is approximately 35 days (Hoogland 1995). They normally have one litter per year, and litter sizes range from one to eight young. On average, only three young survive to the age when they emerge from underground. Black-tailed prairie dogs across their range become sexually mature in the second February or March following birth. Female prairie dogs can live up to eight years in the wild, but males seldom live longer than five years (Hoogland 1995).

Black-tailed prairie dogs occupy short and mid-height grasslands of the western United States, typically at elevations of 2297 feet (700 m) to 5577 feet (1700 m). Black-tailed prairie dogs avoid areas with tall and/or thick vegetative cover (Krueger 1986, Clark and Stromberg 1987); in fact, vegetation within colonies is rarely taller than 0.98 feet (0.3 m; Hoogland 1995). Additionally, they generally avoid slopes steeper than 10% and areas with poorly drained soils (Koford 1958, Dahlsted et al. 1981, Reading and Matchett 1997). Well-drained sandy loam to

silty clay soil provides the structural support necessary for sophisticated burrow systems and level topography and low vegetation allows prairie dogs to detect predators at a distance (Hoogland 1995). Black-tailed prairie dogs feed on a variety of vegetation, including grasses and forbs (Koford 1958) and to a lesser extent seeds and insects (Foster and Hygnstrom 1990). Short-grass species commonly eaten by prairie dogs include buffalo grass (*Buchloë dactyloides*) and blue grama (*Bouteloua gracilis*; Koford 1958).

ROLE OF PRAIRIE DOGS IN GRASSLAND ECOSYSTEMS

Prairie dogs alter grasslands by modifying vegetation structure and composition, soil structure, nitrogen concentration in plant shoots, and landscape configuration. Prairie dog foraging activities and vegetation clipping behavior helps maintain short stature grass and facilitate the detection of predators (King 1955, Hoogland 1995). Prairie dog foraging also causes a shift in plant species composition, frequently increasing diversity and the proportion of short grasses and annual forbs compared to mid-height and tall grasses (Koford 1958, Agnew et al. 1986, Whicker and Detling 1988). Grazing by prairie dogs enhances the growing conditions of certain plants, increases the standing live-to-dead biomass ratio, and increases the nitrogen concentration and nutritional value in available plant shoots (Coppock et al. 1983a, 1983b, Whicker and Detling 1988). The digging actions of prairie dogs enhance soil structure, water filtration, and forb growth.

Prairie dogs produce broader, landscape level effects as well. They create a mosaic of different patch structures within the grassland matrix, based on the distribution of colonies (Hoogland 1981, Whicker and Detling 1988). They also help maintain the grassland ecosystem by preventing the encroachment of woody vegetation. Weltzin et al. (1997) reported that historic populations of black-tailed prairie dogs might have prevented mesquite from attaining dominance in desert grasslands of the southwest. Additionally, prairie dog colonies may serve as fire breaks in grassland communities (Kotliar et al. 1999).

A wide variety of wildlife benefits from some attribute of prairie dog colonies. American bison (*Bison bison*) and pronghorn antelope (*Antilocapra americana*) preferentially forage on prairie dog colonies (Coppock et al. 1983b, Krueger 1986), taking advantage of the highly nutritional vegetation (Foster and Hygnstrom 1990). A number of species prey on prairie dogs, and in the case of the black-footed ferret, are highly dependent on them as a food source (Knowles and Knowles 1994, Kotliar et al. 1999). In addition, species such as burrowing owls (*Athene cunicularia*), swift foxes (*Vulpes velox*) and black-footed ferrets use prairie dog burrows for shelter (Wuerthner 1997, Desmond et al. 2000). Kotliar et al. (1999) reviewed the literature on prairie dog-associated species, and found that at least nine species showed some degree of dependence on prairie dogs (Appendix II). Several of these species have experienced population declines concurrently with the decline in prairie dog numbers, and have been or are under consideration for federal protection (Kotliar et al. 1999). Because the black-tailed prairie dog influences ecosystem functions through its activities in unique and significant ways, it is considered as a keystone species of the prairie grasslands (Miller et al. 1994, Kotliar et al. 1999,

USFWS 1999, Kotliar 2000). Scientists believe that protecting the prairie dog will provide a safety net for other sensitive grassland species (Knowles and Knowles 1994, Miller et al. 1994).

HISTORICAL STATUS IN ARIZONA

The black-tailed prairie dog's range in Arizona accounted for approximately one to two percent of the historic range of the black-tailed prairie dog. The species ranged from the Sulphur Springs Valley north of Bonito, south to the Mexican border and west to the Sonoita grasslands on the west side of the Huachuca Mountains (Hoffmeister 1986). This range included parts of present day Cochise, Graham, Pima, and Santa Cruz counties. Oakes (2000) found no definite historical records for black-tailed prairie dogs in Greenlee County despite records nearby in New Mexico. If the species did occur in Greenlee County, the colonies were likely small and primarily located in the southeastern corner of the county. In Arizona, black-tailed prairie dogs mainly occurred in Plains Grasslands and at the upper limits of the Desert Grasslands, at elevations of 4136 feet (1260 m) to 5200 feet (1585 m; Brown et al. 1974).

In the late 1800s, black-tailed prairie dogs were quite abundant throughout their range in southeastern Arizona. In 1907, Mearns (cited in Hoffmeister 1986) reported that "For miles the burrows of these animals are thickly scattered over the plains south of the Piñaleno range or Sierra Bonito, where the soil is clayey and better suited to the habits of this animal than the loose sand of most of Arizona." Although Alexander (1932) considered black-tailed prairie dogs extirpated from Arizona by 1932, others put the date as late as 1960 (Cockrum 1960). Charles V'orhies collected two animals six miles southeast of Fort Huachuca in 1938 (Hoffmeister 1986); and in a 1962 memorandum to the Bureau of Sports Fisheries and Wildlife Regional Director, Everett M. Mercer documented the persistence of a small black-tailed prairie dog colony near Apache, Arizona until 1959-1960.

The factors that led to extirpation of the species from Arizona are similar to those that caused range-wide population declines. In the early 1900s, biologists and scientists targeted prairie dogs as an impediment to economic progress in the semi-arid West and implemented an aggressive government subsidized eradication effort (Oakes 2000). Hence, poisoning is regarded as the primary cause of their extirpation from the state. Although sylvatic plague is currently the greatest threat to all prairie dog species, it was probably not a significant factor in reducing black-tailed prairie dog numbers in Arizona. While plague can occur anywhere in Arizona above 4500 feet (1372 m) in elevation, it is much more common in northern Arizona than in the southeastern portion of the state (Craig Levy, ADHS, pers. comm.). However, the Arizona Department of Health Services has documented sporadic plague outbreaks in southeastern Arizona, such as occurred in Cochise and Graham counties in the mid-1980s. These outbreaks occurred despite the absence of prairie dogs in southeastern Arizona, illustrating that many other rodent species are hosts for plague (Craig Levy, ADHS, pers. comm.).

STATE MANAGEMENT AND REGULATIONS

The AGFD lists the black-tailed prairie dog as Wildlife of Special Concern under the *Threatened Native Wildlife in Arizona* (1988) and as a Species of Greatest Conservation Need (Tier 1A) under the states' *Comprehensive Wildlife Conservation Strategy* (AGFD 2006). These documents provide policy guidance to both state and federal agencies and the public on AGFD priorities. It does not provide specific legal or regulatory protection for listed species. However, the general provisions of Arizona Revised Statutes, Title 17 protect all native wildlife, including federally listed species. The AGFD classifies all prairie dog species as nongame mammals. Recreational shooters are required to obtain a hunting license to take prairie dogs. However, there is no open season for black-tailed prairie dogs.

REESTABLISHMENT METHODS

POTENTIAL HABITAT

The AGFD has been exploring the possibility of reestablishing black-tailed prairie dogs in Arizona since the early 1970s (Brown et al. 1974, Van Pelt and Belitsky 1995). In 1995, the AGFD conducted a habitat assessment for the black-tailed prairie dog on Fort Huachuca and identified approximately 11,000 acres (4452 ha) of potential habitat (Van Pelt and Belitsky 1995). However, a decision to reestablish the species was not made at that time. In 2000, as part of the range-wide black-tailed prairie dog conservation effort, the AGFD re-initiated the process of assessing areas of the state for suitable black-tailed prairie dog habitat. Using GIS, the AGFD generated a map of potentially suitable habitat in southeastern Arizona based on biotic factors such as elevation, slope, soil type, and vegetation community. This exercise delineated 2.9 million acres (~1.2 million ha) of potentially suitable habitat (Figure 1).

The Arizona Black-tailed Prairie Dog Working Group (ABPDWG) decided to initially focus on federal and State Trust lands at least two miles from private property. The intent of this stipulation was to provide a buffer between potential reestablishment sites and private lands owned by people who do not want to furnish habitat for prairie dogs. However, landowners interested in having prairie dogs will be encouraged to do so. With the inclusion of this criterion, the potentially available habitat dropped to 202,156 acres (81,810 ha), divided among Bureau of Land Management (BLM), USDA Forest Service (USFS), Department of Defense, US National Park Service, and the Arizona State Land Department (Van Pelt et al. 2001).

EVALUATION OF POTENTIAL RELEASE SITES

In 2004, AGFD personnel assessed 77,463 acres (31,362 ha) of potential BTPD habitat on lands administered by the Safford Field Office of the BLM primarily located within the San Simon and Whitlock Valleys of southeastern Arizona (Figure 2; Blasch et al. 2004). None of the land, in its current state, met habitat requirements for the black-tailed prairie dog. Most of this potential habitat was dominated by creosote and had very little perennial grass or herbaceous cover. Many of these areas were highly volcanic with large rocks covering the ground with no evidence of any

burrowing animals. However, 21,132 acres (8555 ha) could meet necessary site characteristics for black-tailed prairie dog habitat with extensive vegetation manipulation.

Another study by the University of Arizona in 2002-2004, funded by the AGFD's Heritage Fund, assessed potential habitat in the San Pedro Riparian National Conservation Area, Fort Huachuca, and the Las Cienegas National Conservation Area (Figure 3; Koprowski and Coates 2004). This study compared the potential habitat in Arizona to the closest black-tailed prairie dog occupied site in the San Pedro River Valley at the Ejido Morelos near Cananea Municipality in Sonora, Mexico. These four sites were also compared to an unoccupied site close to the occupied site in Mexico. This study found the San Pedro site to be too shrub invaded and the Fort Huachuca site to have a high density of non-native grasses that grow to a height not conducive to prairie dogs. The Las Cienegas National Conservation Area was identified as being most similar to occupied sites in Mexico and therefore provides the best potential reestablishment area.

PROPOSED RELEASE SITE

The Las Cienegas National Conservation Area (Figures 3, 4) is the preferred site for the first black-tailed prairie dog reestablishment attempt in Arizona. This location contains approximately 15,421 ac (6240 ha) of potential habitat. In addition this site was identified as one of four focal areas by the ABPDWG for a reestablishment effort (Appendix III). The area is characterized by Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe and Apacherian-Chihuahuan Mesquite Upland Scrub (Lowry et al. 2007). The grassland habitat within this potential habitat is the area where reestablishment would occur.

Prairie dogs generally prefer deep well-drained soils of sandy-loam to loamy-clay texture and low vegetation (Hoogland 2005). The grasslands of the Las Cienegas site are well suited for prairie dog release because they have the appropriate soil and vegetative components (Hoffmeister 1986, Van Pelt et al. 2001, Hoogland 2005). Grass, forb, and shrub cover percentages are all similar to those found on occupied sites in Mexico (Koprowski and Coates 2004). These vegetative characteristics are also similar to those in other areas where successful reestablishment efforts have occurred (Hoogland 2005). Recent visits to key sites have confirmed that prairie dog habitat still exists in these areas and that potential predators or competitors are not in an abundance that would lessen the likelihood of success in translocation. This site is also within the historical range of the species (Figure 5), and the potential for expansion into other formerly occupied sites does exist.

Initially, this reestablishment effort will focus on one site in the Las Cienegas National Conservation Area. This first site will serve as an experimental location from which we can evaluate and modify the methodology used to reintroduce the black-tailed prairie dog in Arizona. Once the black-tailed prairie dog has been successfully established at the initial site, we will initiate reestablishment efforts at up to 5 other sites throughout southeastern Arizona. These additional sites may be located outside of the Las Cienegas National Conservation Area, but all

additional sites will follow the same public process and criteria for selection as the initial location.

SOURCE POPULATIONS

We will collect prairie dogs to be released from sites as ecologically similar to the release sites in Arizona as possible. This range includes central and southern New Mexico, southeastern Arizona, southwestern Texas, and Chihuahua and Sonora, Mexico (Oakes 2000). Prairie dogs from these populations are likely most similar genetically and ecologically to those that were extirpated from Arizona, based on their proximity to former Arizona populations. Whenever possible, collection of individuals for release will be sufficiently large so genetic bottlenecks will be avoided and genetic variability will be maximized (Hedrick and Miller 1992). Additionally, translocation of intact family groups (coteries) may increase the success of prairie dog translocations (Hoogland 2005, Shier 2006). Therefore, we will make an effort to translocate complete coteries to increase the chance for success of the reestablishment.

SITE PREPARATION AND RELEASE

Release sites will be prepared in advance of animal capture and release. Site preparation may include treatment to reduce the height of tall vegetation and the instillation of acclimation cages with man-made burrows. Recipient sites are most suitable when all vegetation is shorter than 6 inches (Hoogland 2005). Vegetation should be reduced to no greater than 12 inches for up to 50 meters surrounding the burrow site (Hoogland 2005). This reduction in vegetation can be achieved through mowing, grazing, or prescribed fire (Truett 2001).

ACCLIMATION CAGES AND MAN-MADE BURROWS

To prevent prairie dogs from quickly dispersing out of an area, acclimation cages in combination with man-made burrows are essential (Hoogland 2005). Each acclimation-cage consists of an underground nest chamber and an above ground retention basket connected by flexible, corrugated plastic tubing with a diameter of 4 inches (see Figure 6). This allows movement of prairie dogs between a nest-chamber and retention basket, but deters escape during the period of acclimation. Acclimation-cages will be deployed 10-20 meters apart in a grid fashion (Hoogland 2005). Four to ten individuals will be placed in each acclimation pen and dry food and water will be provided in the retention baskets. After introducing the prairie dogs, they will be allowed to dig themselves out of the acclimation cages or, after two weeks, the retention-baskets will be removed. If necessary, the acclimation cages and the associated man-made materials will be removed.

CAPTURE AND RELEASE

Wire mesh livetraps suitable for prairie dogs will be used to trap individual on the selected donor sites. Livetraps will be pre-baited for several days using oats as bait. Immediately after capture, all prairie dogs will be dusted for fleas using Delta Dust to kill fleas which could transmit plague (Hoogland 2005). All prairie dogs that die during, after capture, and for up to 2 weeks post-

release will be necropsied. Testing for plague will be the primary objective, but documenting other causes of mortality (e.g. tularemia) is also valuable.

Approximately 60-100 prairie dogs will be released at the reestablishment site. This number of prairie dogs is generally believed to be required for a successful reestablishment (Truett et al. 2001, Hoogland 2005).

POST-RELEASE MONITORING

Monitoring is a critical step in the reestablishment process. Only through a carefully designed monitoring plan will we be able to determine whether the attempt at reestablishment was successful and formulate future plans based on the successes and failures. Both dynamics of translocated prairie dog populations and the quality of habitat to which they were released need to be monitored. Some researchers have suggested a monitoring commitment of 6 to 10 years to gain insight into the successful reestablishment.

The necessity of a long-term monitoring plan becomes evident when considering how to define success in reestablishment. Success of a reestablishment should be evaluated on multiple temporal scales. Immediate or short-term success would be evaluated in the weeks following the release of animals. Long-term success, the establishment of a self-sustaining wild population, can not be determined until the founding population has had time to establish and reproduce. This suggests that at a minimum, monitoring needs to take place for at least 3 years.

In the short-term, monitoring of translocated prairie dogs not only measures success, but allows for early detection and correction of problems. The primary technique used to monitor translocated prairie dogs is periodic visual censuses which can assess the survivorship of a newly established colony (Hoogland 2005). Since prairie dogs spend a large amount of time underground, and not all individuals can be counted, we will use standard indexes of observability to estimate the number of prairie dogs that remain at the release site (Hoogland 2005). Post release counts of translocation sites will occur weekly during the 3 months following release (Hoogland 2005, USFWS 2006). After this point, the survival and population size of translocated animals generally remains fairly constant (Hoogland 2005). Monitoring during the first three months will also include a measure of the distribution, abundance and quality of new burrows, as this provides insight into the security of released animals (Truett et al. 2001) and the incidence of predators and predation. Monitoring for evidence of plague in the reestablished prairie dogs will continue throughout this time period. If detected, prairie dog colonies will be dusted for fleas.

After the initial three months period of intensive monitoring, long-term monitoring of the reestablishment site will occur on a monthly for up to three years. At the conclusion of the second phase, reestablishment sites will be monitored seasonally for an additional seven years (USFWS 2006). Monitoring will not only occur on black-tailed prairie dog population dynamics, but also on the effect of reintroduction to the grassland ecosystem. To measure grassland

ecosystem response, changes in vertebrate diversity and changes in vegetative composition and structure will be monitored. Monitoring for evidence of plague in the reestablished prairie dogs will continue throughout this time period. If detected, prairie dog colonies will be dusted for fleas.

PROCESS

SCHEDULE OF ACTIVITIES

Steps 1 through 8 of the AGFD's 12-step reestablishment procedure have been completed. For an outline of the 12 steps, see Appendix I. The remaining steps need to be completed prior to release of black-tailed prairie dogs in Arizona. For a timeline of the remaining steps, see (Table 1).

Table 1. Approximate timeline for the black-tailed prairie dog 12 step reestablishment procedure.	
Task	Completion Date
Step 1: Assess status of species/population available resources.	March 2000
Step 2: Complete reestablishment scorecard; submit it to Nongame Branch.	December 2000
Step 3: Prepare proposal abstract; distribute it and scorecard throughout AGFD.	March 2002
Step 4: Submit briefing memo to AGFC through AGFD Director.	July 2002
Step 5: Review AGFD comments and develop project checklist. Submit summary to AGFD Director.	August 2003
Step 6: Solicit comment on project concept from public and appropriate agencies, organizations.	October 2003
Step 7: Discuss project and public input and AGFD recommendations with AGFC.	March 2007
Step 8: Prepare reestablishment proposal. Distribute for review and submit to AGFC.	January 2008
Step 9: Initiate environmental assessment checklist (EAC).	January 2008
Step 9: Comments on draft proposal due; evaluate and revise proposal as necessary.	February 2008
Step 9: Complete EAC.	February 2008
Step 10: Distribute final draft proposal for internal, external, and AGFC review.	February 2008
Step 10: External comments due on final proposal.	March 2008
Step 11: Summarize comments, review proposal. Submit final project proposal to AGFD Director for action.	March 2008
Step 12: Notify AGFC and public of decision.	March 2008

COORDINATION

In addition to the AGFD, participants in this reestablishment effort include Bureau of Land Management (BLM), Arizona State Land Department, Malpai Borderland Group, the Phoenix Zoo, U.S. Forest Service, U.S. Army Fort Huachuca, and other interested parties. Representatives from these organizations and several private citizens make up the ABPDWG.

EA / EIS REQUIREMENTS

ESA compliance and preparation of NEPA documents would need to be completed if deemed appropriate. Because the black-tailed prairie dog is not federally listed, a Section 7 consultation

will only be needed if it is determined that this proposal affects another listed species (see CONFLICTS / RESOLUTIONS). Any other state and federal administrative procedures necessary to reestablish black-tailed prairie dogs in Arizona are folded into the 12-step procedure.

PUBLIC INVOLVEMENT

Throughout the 12-step process, the public have several opportunities to provide input into this proposal. Public meeting have been held around the southern part of the state so that all concerned citizens could express their opinions. We will continue to encourage similar public involvement throughout the reestablishment effort.

CONFLICTS / RESOLUTIONS

All proposed release sites are on BLM managed lands. BLM participates in the ABPDWG and has committed to support the reestablishment effort. Present land uses include compatible activities such as recreational hunting, camping, hiking, and livestock grazing. Livestock grazing occurs around potential reestablishment sites, and mining occurs at nearby localities. These existing uses have not severely impacted black-tailed prairie dog habitat and are compatible with reestablishment efforts at present levels and sites.

FIELD ACTIVITIES

Field activities to implement this project include 1) final evaluation of microsites, 2) collecting of prairie dogs 3) preparation of sites, 4) release of prairie dogs and 5) monitoring of populations and habitats (See proposed budget Appendix IV).

MANAGEMENT ALTERNATIVES

DO NOT REESTABLISH BLACK-TAILED PRAIRIE DOGS IN ARIZONA

If the black-tailed prairie dog is not brought into Arizona, it is unlikely that it could naturally reestablish in the foreseeable future. Known populations in Mexico are approximately 100 km distant from former Arizona localities (Figure 3) and regions of uninhabitable arid land separate the habitable grassland regions. Currently, black-tailed prairie dog populations are considered stable in several other states and in parts of northern Mexico. This indicates that the black-tailed prairie dog is not immediately threatened with range-wide extinction. However, plague can cause sudden die-offs in black-tailed prairie dogs and the best defense against such an outbreak is widely dispersed populations of prairie dogs. Initiating reestablishment efforts and beginning to actively manage this species now may help it to persist into the future, and avoid possible federal listing actions.

REESTABLISH BLACK-TAILED PRAIRIE DOGS AS PROPOSED

The benefits of reestablishing black-tailed prairie dogs in Arizona could go beyond the direct effects on black-tailed prairie dogs. Since black-tailed prairie dogs are keystone species in grasslands, many other wildlife species would benefit from the grassland restoration brought about by reestablishment of prairie dogs. Success in reestablishment would increase the current

geographic range of the prairie dog, which should make the population as a whole more robust to stochastic or localized catastrophic events. The successful reestablishment of a native prairie dog in Arizona would add to the state's natural heritage and bring back an important component currently missing from Arizona's southern grasslands.

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FIGURES

Figure 1: Black-tailed Prairie Dog Potential Habitat in Arizona

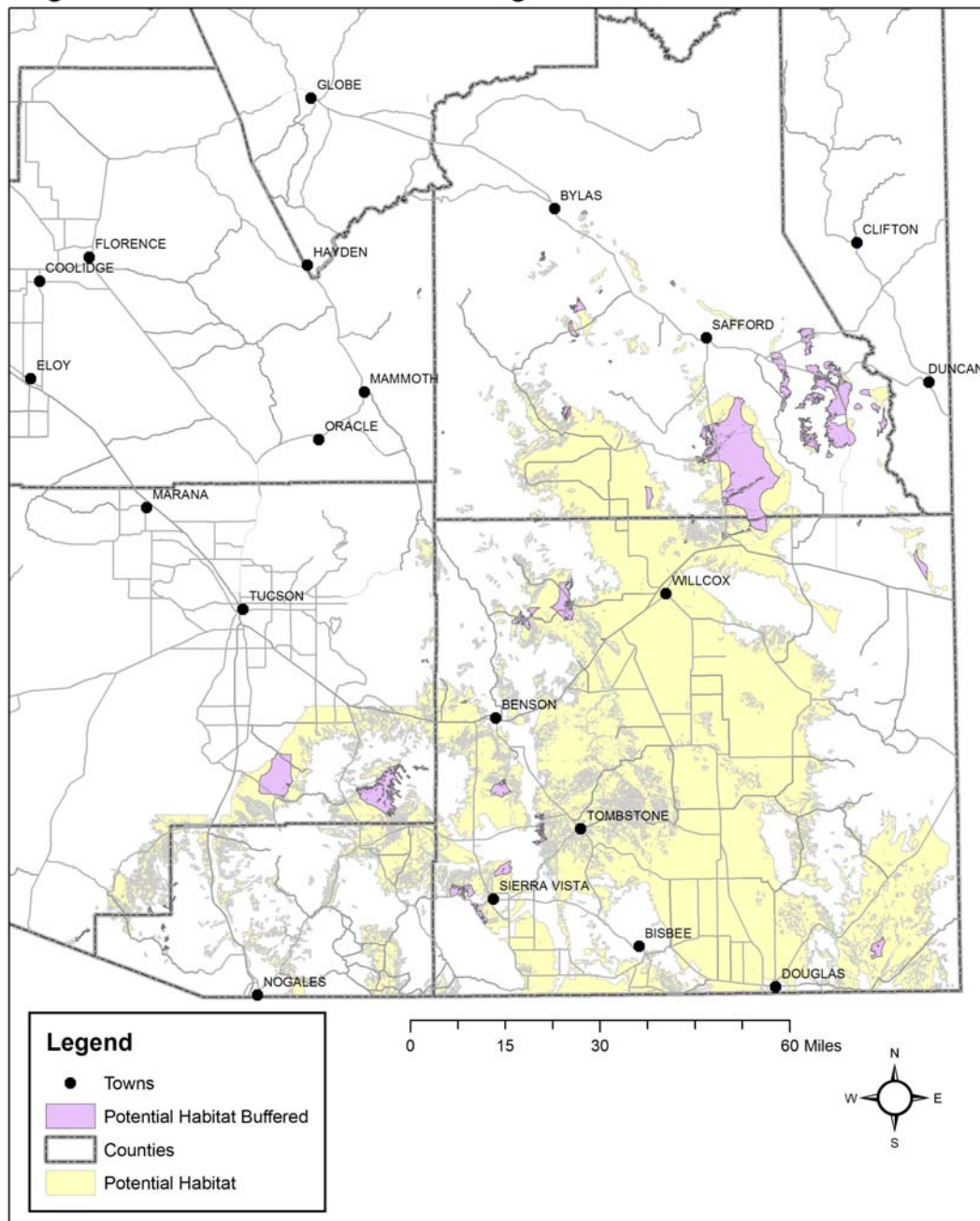


Figure 1: Map of potential black-tailed prairie dog habitat in Arizona

Figure 2: Safford BLM Administered Lands with Buffered Potential Habitat

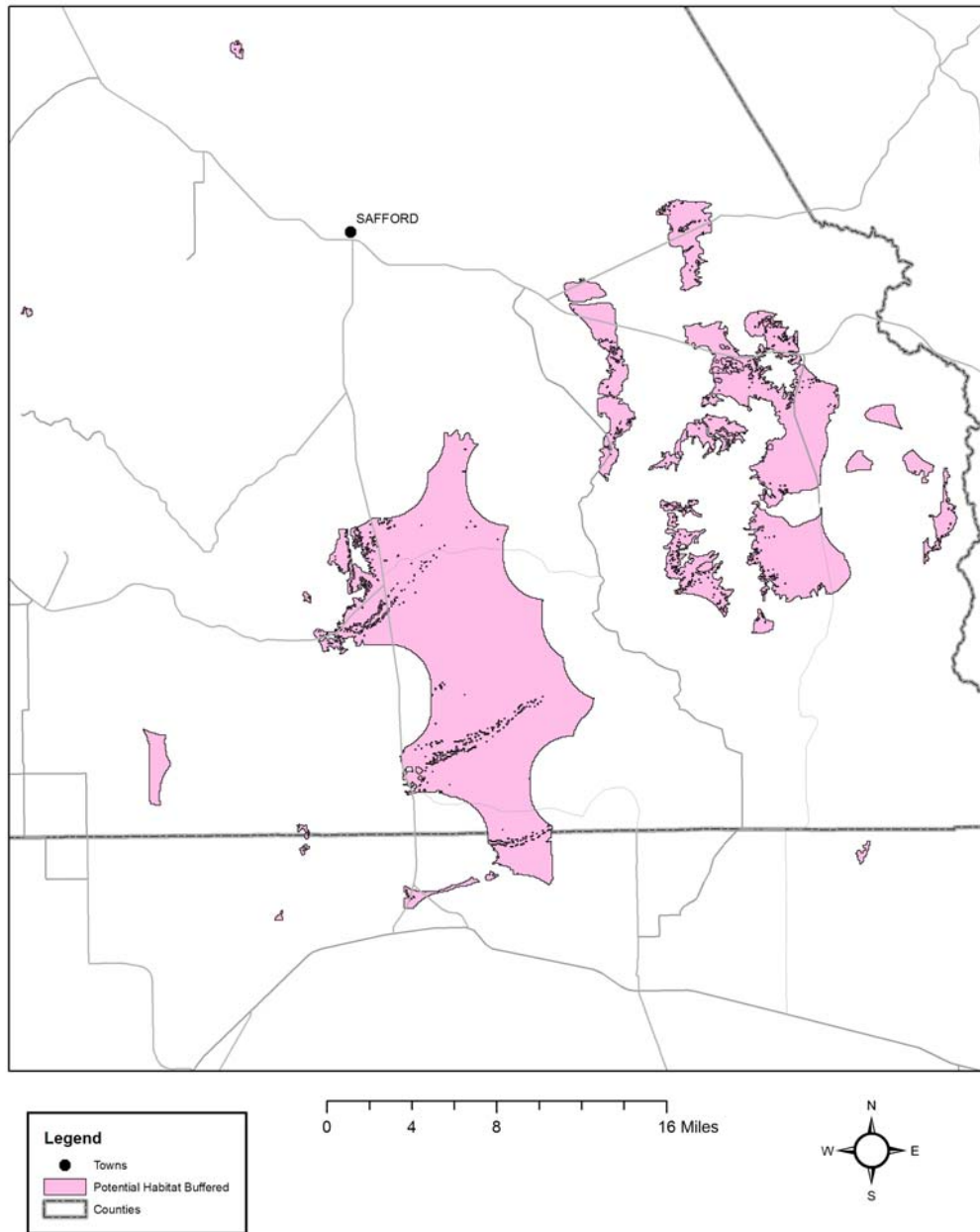


Figure 2: Potential black-tailed prairie dog habitat administered by the Safford BLM Office

Figure 3: University of Arizona study areas used for habitat suitability study

Figure 4: Photos of proposed release site: Las Cienegas National Conservation Area



Figure 5: Historical distribution of the black-tailed prairie dog.

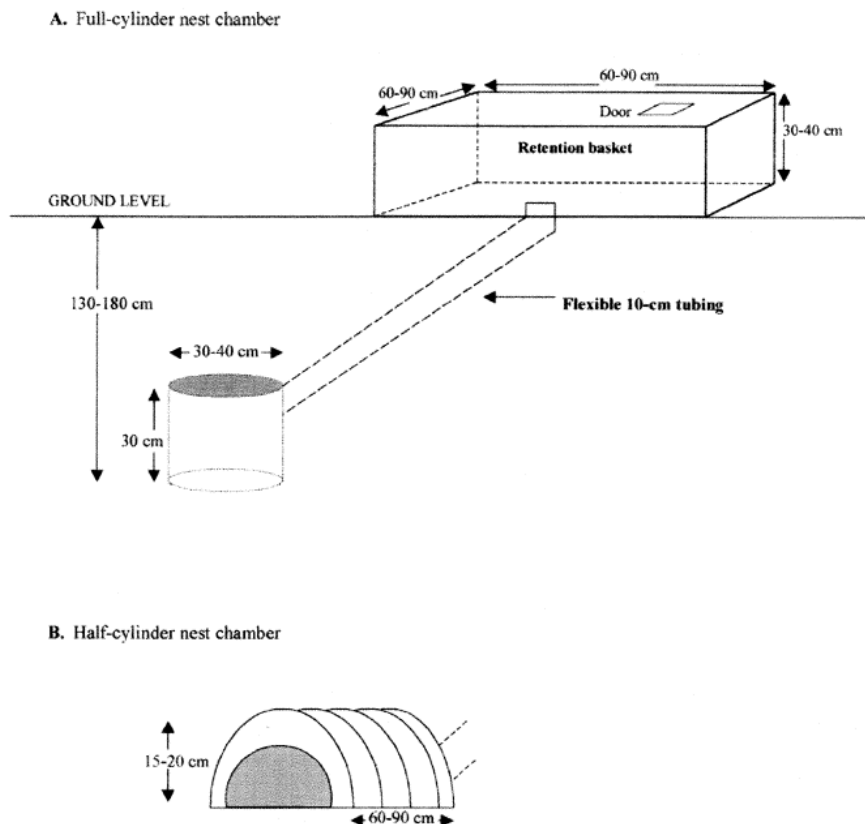


Figure 13.2. Acclimation-cage used to coerce translocated prairie dogs to remain at a recipient-site. Each acclimation-cage consists of an underground nest-chamber and an aboveground retention-basket, connected by flexible plastic tubing with a diameter of 10 cm (4 in). Materials for the construction of full- and half-cylinder nest boxes include non-perforated plastic tubing with a diameter of 10 cm (4 in), particle-board, and 1-cm \times 1-cm (0.25-in \times 0.25-in) hardware cloth. The retention-basket, used with both full- and half-cylinder nest-chambers, consists of 2.5-cm \times 5.0-cm (1-in \times 2-in) welded wire, and has a hinged access door in the top, and a 10-cm \times 10-cm (4-in \times 4-in) hole in the bottom for the plastic tubing. (A) The full-cylinder nest-chamber is installed with a powered auger and trencher. (B) The half-cylinder nest-chamber is installed with a backhoe. The half-cylinder nest-chamber usually takes less time to install than the full-cylinder nest-chamber, but disturbs more soil. Prairie dogs readily use both types of nest-chamber. Details for construction and installation are available from authors.

Figure 6: Site preparation: (Hoogland 2005)

APPENDICES

APPENDIX I: SCHEDULE OF ACTIVITIES FOR PROPOSING NONGAME WILDLIFE AND ENDANGERED SPECIES REESTABLISHMENT PROJECTS

APPENDIX II: VERTEBRATE SPECIES ASSOCIATED WITH PRAIRIE DOGS, ADOPTED FROM KOTLIAR ET AL. (1999)

<u>Species</u>	<u>Status and Distribution in Arizona</u>
Prairie Dog-Associated Species* :	
Black-footed Ferret (<i>Mustela nigripes</i>)	Endangered; extirpated from state and re-established into Aubrey Valley near Seligman, AZ. Historic range probably from western Coconino County eastward, north of Mogollon Rim, potentially south of the Rim in Graham and Cochise counties ¹
Mountain Plover (<i>Charadrius montanus</i>)	Candidate species; very local breeder in small numbers near Springerville, AZ ²
Burrowing Owl (<i>Athene cunicularia</i>)	Numbers may be decreasing; found sparingly throughout AZ ³
Golden Eagle (<i>Aquila chrysaetos</i>)	Fairly common in mountainous areas throughout state ³
Ferruginous Hawk (<i>Buteo regalis</i>)	Species of Special Concern ⁴ , breeding population only; uncommon and widely distributed summer resident of northern AZ and irregular summer resident in southeastern AZ, fairly common in winter in southern part of state ³
Horned Lark (<i>Eremophila alpestris</i>)	Common in open grassland and farmland throughout state ³
Deer Mouse (<i>Peromyscus maniculatus</i>)	Common and widely distributed throughout AZ except arid desert and some southern oak woodlands ¹
N. Grasshopper Mouse (<i>Onychomys leucogaster</i>)	Northern AZ & south of Mogollon Plateau from near Gila River south through Cochise County ¹
Swift Fox (<i>Vulpes velox</i>)	Former Candidate Sp., not found in Arizona ¹

*These species are dependent on prairie dogs to varying degrees.

Other Sensitive or Game Species That May be Associated with Prairie Dogs (More Data Needed to Determine Degree of Association):

Sonoran Tiger Salamander (<i>Ambystoma tigrinum stebbinsi</i>)	Endangered; breeds in scattered livestock ponds in San Rafael Valley ⁴
Yellow Mud Turtle (<i>Kinosternon flavescens flavescens</i>)	Species of Special Concern; Lower San Simon, Whitlock, & Sulphur Springs valleys of SE Arizona ⁴
Arizona Striped Whiptail (<i>Cnemidophorus inornatus arizonae</i>)	Species of Special Concern; Sulphur Springs Valley ⁴
Prairie Rattlesnake (<i>Crotalus viridis</i>)	Rarely encountered in AZ; extreme southeastern Arizona in San Simon River basin ⁵
Prairie Falcon (<i>Falco mexicanus</i>)	Populations may be declining; fairly common to uncommon resident statewide ³
Swainson's Hawk (<i>Buteo swainsoni</i>)	Species of Special Concern, breeding population only; common in southeastern AZ, sparse in northwestern part of state ^{3,4}
Crested Caracara (<i>Polyborus plancus</i>)	Numbers have decreased since 1920s; very local breeder in south-central AZ ³
Scaled Quail (<i>Callipepla squamata</i>)	Game species; common in south-central/southeastern AZ, sparse on Navajo Nation ^{2,3}
Mule Deer (<i>Odocoileus hemionus</i>)	Game species; most of AZ except southwestern corner ¹
White-tailed Deer (<i>Odocoileus virginianus</i>)	Game species; southeastern AZ and Mogollon Plateau ¹
Pronghorn (<i>Antilocapra americana</i>)	Game species (Sonoran subspecies is Endangered); formerly found throughout much of AZ ^{1,4}

¹ Hoffmeister 1986

² Arizona Breeding Bird Atlas, unpubl. data

³ Monson and Phillips 1981

⁴ The Arizona Game and Fish Department maintains a list of Wildlife of Special Concern in Arizona, which includes species whose occurrence in Arizona is, or may be, in jeopardy due to population declines and habitat loss/destruction. Inclusion on this list affords no special legal status for the species (AGFD, in prep).

⁵ Lowe et al. 1986

APPENDIX III: POTENTIAL BLACK-TAILED PRAIRIE DOG HABITAT IN SOUTHEASTERN ARIZONA: FOCAL AREAS AND OCCUPIED ACREAGE OBJECTIVES

The Working Group identified four potential focal areas for black-tailed prairie dog re-establishment in southeastern Arizona based on biotic (*unbuffered*) and political (*buffered*) factors (Fig. 1). Initially, the Working Group chose to focus on federal and State Trust land at least two miles from private land (*buffered potential habitat*). However, the Working Group may also consider private lands if landowners volunteer to cooperate in the conservation effort. Potential re-establishment sites will be chosen to provide avenues for dispersal and population expansion, and yet guard against a potential plague outbreak debilitating the entire effort.

The Working Group established short-term (10-year) occupied acreage goals for southeastern Arizona. The Working Group based these goals on the minimum criteria for a Candidate Conservation Agreement with Assurances (CCAA) as proposed by the Black-tailed Prairie Dog Conservation Team:

1. *Manage one area in each state for a black-tailed prairie dog complex of 5,000 occupied acres.* This 5,000-acre (2,023 ha) complex will be located in one of the four focal areas identified in Figure 1. The exact location will not be determined until the Department makes a decision on re-establishment and biologists conduct site visits to verify suitability.
2. *Manage 10% of black-tailed prairie dog acreage in complexes >1,000 acres (405 ha).* The 5,000-acre complex required above can be applied toward this requirement.
3. *Re-establish historical distribution to 75% of counties in which species once occurred.* In Arizona, black-tailed prairie dogs historically occurred in four counties: Cochise, Graham, Santa Cruz, and Pima counties. Therefore, the species should be re-established in three of these four counties.
4. *Meet or exceed 7,100 acres of occupied black-tailed prairie dog habitat in Arizona by 2011.* This is the proposed occupied acreage objective for Arizona in the range-wide proposal for black-tailed prairie dog conservation. After the specific site for the 5,000-acre (2,023 ha) complex is identified, the other 2,100 acres (850 ha) will be chosen so that criterion #3 is satisfied.

Long-term goals will be based on population viability of the black-tailed prairie dog and associated species, and will be established later when results from on-going population viability analyses are available.

Figure 1. The four focal areas displaying buffered and unbuffered potential black-tailed prairie dog habitat

* Focal Area 1 = San Bernardino Valley; Focal Area 2 = San Simon/Sulphur Springs Valley; Focal Area 3 = San Pedro/Ft. Huachuca/Empire Cienega; Focal Area 4 = San Rafael Valley.

Land stewardships and potentially available acreage within each focal area. (Note: this does not include all unbuffered black-tailed prairie dog habitat in Arizona, just that identified within the focal areas).

A. Potential acreage by focal area: private lands included.

<u>Focal Area</u>	<u>County</u>	<u>Landowner</u>	<u>Area (ha)</u>	<u>Area (acres)</u>
1	COCHISE	BLM	49.4	122
1	COCHISE	Forest Service	983.8	2430
1	COCHISE	Private	25461.4	62890
1	COCHISE	State Trust Lands	46086.0	113832
1	COCHISE	Nat'l Wildlife Refuge	211.3	522
2	COCHISE	AZ Game and Fish Dept	855.3	2113
2	COCHISE	BLM	17239.6	42582
2	COCHISE	Forest Service	6586.5	16269
2	COCHISE	Military	11054.0	27303
2	COCHISE	Nat'l Parks / Monuments	4.7	11
2	COCHISE	Private	351668.3	868621
2	COCHISE	State Trust Lands	220315.4	544179
2	GRAHAM	BLM	45276.7	111833
2	GRAHAM	Forest Service	4429.1	10940
2	GRAHAM	Private	38630.2	95417
2	GRAHAM	State Trust Lands	56916.6	140584
3	COCHISE	BLM	1543.2	3812
3	COCHISE	Forest Service	1202.1	2969
3	COCHISE	Military	12131.1	29964
3	COCHISE	Private	30368.4	75010
3	COCHISE	State Trust Lands	22430.3	55403
3	PIMA	BLM	9464.8	23378
3	PIMA	Forest Service	1427.4	3526
3	PIMA	Private	12609.1	31144
3	PIMA	State Trust Lands	38158.7	94252
3	SANTA CRUZ	BLM	4060.2	10029
3	SANTA CRUZ	Forest Service	954.7	2358
3	SANTA CRUZ	Private	19167.4	47344
3	SANTA CRUZ	State Trust Lands	2647.9	6540
4	SANTA CRUZ	Forest Service	2065.9	5103
4	SANTA CRUZ	Private	9478.5	23412
4	SANTA CRUZ	State Trust Lands	138.6	342
			993,616.6	2,454,233

* Focal Area 1 = San Bernardino Valley; Focal Area 2 = San Simon/Sulphur Springs Valley; Focal Area 3 = San Pedro/Ft. Huachuca/Empire Cienega; Focal Area 4 = San Rafael Valley

B. Potential acreage by focal area: two-mile buffer on private property. (*Note: this does not include all buffered black-tailed prairie dog habitat in Arizona, just that identified within the focal areas*).

<u>Focal Area</u>	<u>County</u>	<u>Landowner</u>	<u>Area (ha)</u>	<u>Area (acres)</u>
1	COCHISE	State Trust Lands	1005.0	2482
2	COCHISE	BLM	1429.7	3531
2	COCHISE	State Trust Lands	5827.8	14395
2	GRAHAM	BLM	30031.5	74178
2	GRAHAM	Forest Service	427.0	1055
2	GRAHAM	State Trust Lands	15778.0	38972
3	COCHISE	Military	2508.6	6196
3	COCHISE	State Trust Lands	1336.5	3301
3	PIMA	BLM	4306.8	10638
3	PIMA	State Trust Lands	8459.4	20895
			71,110.4	175,643

* Focal Area 1 = San Bernardino Valley; Focal Area 2 = San Simon/Sulphur Springs Valley; Focal Area 3 = San Pedro/Ft. Huachuca/Empire Cienega; Focal Area 4 = San Rafael Valley

APPENDIX IV: PROPOSED 5-YEAR BUDGET

Five-year draft budget for Black-tailed prairie dog reestablishment in Arizona.							
	TASK	FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
1	Project coordination						
1.a.	Planning and public meetings	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
1.b.	Data analysis and report writing	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
2	Habitat Surveys						
2.a.	Reintroduction site visits	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
2.b.	Assessment of potential sites	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
2.c.	Materials	\$7,000	\$5,000	\$2,000	\$2,000	\$2,000	\$18,000
3	Site Preparation						
3.a.	Materials	\$8,000	\$8,000	\$3,000	\$3,000	\$3,000	\$25,000
3.b.	Labor	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
4	Collect prairie dogs						
4.a.	Trapping	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
4.b.	Translocation	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
4.c.	Trapping supplies	\$5,000	\$2,000	\$2,000	\$2,000	\$2,000	\$13,000
5	Release	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
6	Monitoring	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
	Total	\$64,000	\$59,000	\$51,000	\$51,000	\$51,000	\$276,000